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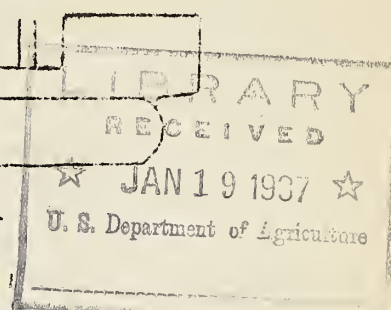
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CONSTRUCTION



HINTS



UNITED STATES DEPARTMENT OF AGRICULTURE, FOREST SERVICE

Vol. 1

Washington, D. C.

May 4, 1935

No. 1

Construction Hints are intended to be a means of distributing helpful suggestions pertaining to engineering and construction among the field men of the Forest Service. It will be published bi-weekly, every other Saturday, by the Division of Engineering, U.S. Forest Service, Washington, D.C.

If the field men of the Regions will cooperate by contributing descriptions of construction methods or similar matter which may be of value to other Regions this little news letter should do much toward promoting good practice and improving Forest Service methods. The matter contributed may cover any field of construction or engineering engaged in by the Forest Service. Field men should make their contributions through the Regional Forester. Appropriate credit will be given for all matter published.

The regions should request the desired number of copies of succeeding issues. It is hoped that a sufficient number will be requested to provide one copy for each engineer and camp superintendent in the Region.

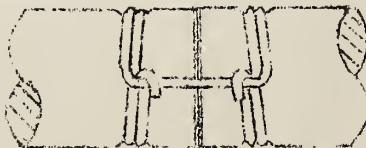
Suggestions and criticism that will help make Construction Hints a success will be appreciated.

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THE EDITOR.

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All letters of complaint on equipment, sent in by the Regions are carefully read and studied. All of you may be assured that we are glad to receive material of this sort. Everything possible is being done to secure equipment that will satisfactorily meet the needs of the Regions. We know that the Regions will get a laugh out of any intimation from this office that their complaints may bring about a better selection of equipment. Don't give up hope. We may yet send some one something that is exactly what he wanted.

Did you know that there is a new tool on the market for clamping hose? The clamp goes two or more times around the hose as shown below:



"Standard" width (twice around)
Approximately one inch between the two double
coils.

The clamp is applied with a snubber tool that looks like a vise. After the winding is completed the wires are cut off and the ends hammered down as shown:

The Forest Service is financing an investigation on crank case oils by the Bureau of Standards. Dr. Bridgeman is spending all of his time on the project, and the Regions may soon receive an answer to the questions they have raised about navy contract and other oils.

Tempering Steel, By F. E. Wooldridge, W.O.

The tempering of tools made from tool steel in field shops has been considered an Art belonging to a very small number of construction workers. This gift depended on a keen eye sight, capable of distinguishing the various colors of tool steel while heating.

With modern high grade tool steels, a little care, close observation and almost anyone should be able to temper drill steels used in Forest work of today. This type of steel is in use, mainly on the larger work or quarry jobs or at centralized shops where several camps are served from one shop. The main features are: Do not burn the steel and do not heat back of the bit when tempering.

Tool steel melts at 2462° F. The correct temper for sharpening is around 1450°. According to the hardness and toughness of the rock encountered, various tempers should be used, ranging from Dark Red to light Yellow. The colors and heat are:

Dark Red - 900° F	Yellow - 1950° F
Cherry Red - 1350° F	Light Yellow - 2050° F
Bright Red - 1550° F	White - 2200° F

The use of a kerosene oil burner for heating the steel is recommended. By this means there should not be any danger of burning the steel. Kerosene flames heat the steel to around 1450° F.

After sharpening, the steel should be allowed to cool slowly, then re-heat for tempering. Do not heat the cutting edge base of the swage when tempering. When water is used for tempering be sure the water is near the same temperature for all the steel. Avoid extremely cold or highly mineralized water.

If tempering in oil, be sure that water does not collect in the bottom. To avoid this, make a false bottom of wood to hold the bits a couple of inches from the bottom. Watch and drain the water off at frequent intervals.

Hardening temperature should be around 1440° to 1485° F for all common drill steel. This steel has from 1.50% to 1.00% carbon content.

The higher the carbon content of the steel the lower the temperature it is possible to use.